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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/927,723	08/10/2001	Jao-Chin Cheng	JCLA7513	7185
7590	11/19/2003		EXAMINER	
J.C. Patents			WONG, EDNA	
4 Venture			ART UNIT	PAPER NUMBER
Suite 250				
Irvine, CA 92618			1753	
DATE MAILED: 11/19/2003				

Please find below and/or attached an Office communication concerning this application or proceeding.



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09/927,723	08/10/2001	Jao-Chin Cheng	JCLA7513	7185
7590	10/24/2003		EXAMINER	WONG, EDNA
J.C. Patents 4 Venture Suite 250 Irvine, CA 92618			ART UNIT	PAPER NUMBER
			1753	8/22/03 11/19/03
			DATE MAILED:	10/24/2003

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EXAMINER

WONG, EDNA

ART UNIT

PAPER NUMBER

1753

DATE MAILED: 08/22/2003

2

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Office Action Summary	Application No.	Applicant(s)
	09/927,723	CHENG ET AL.
	Examiner	Art Unit
	Edna Wong	1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on ____.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.
- 4) Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) Claim(s) ____ is/are allowed.
- 6) Claim(s) 1-14 is/are rejected.
- 7) Claim(s) ____ is/are objected to.
- 8) Claim(s) ____ are subject to restriction and/or election requirement.

Disposition of Claims

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 10 August 2001 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on ____ is: a) approved b) disapproved by the Examiner.
 If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. ____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____
- 4) Interview Summary (PTO-413) Paper No(s). ____.
 5) Notice of Informal Patent Application (PTO-152)
 6) Other: _____

Oath/Declaration

The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

It does not identify the citizenship of the first inventor, Jao-Chin Cheng.

Drawings

Figures **1a, 1b, 2a and 2b** should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Applicants' specification discloses that Figs. 1a, 1b, 2a and 2b show a *conventional* process (page 5, lines 3-8).

Specification

The disclosure is objected to because of the following informalities:

page 2, line 1, reference character "200" has been used to designate both an insulating core layer and copper films (from page 1, line 24). It is unclear what reference character "200" designates.

page 2, line 17, the word "aconnecting" should be amended to the words -- a connecting --.

page 2, line 19, it is suggested that the word -- is -- be inserted after the word "board".

page 3, line 2, it is suggested that the word -- the -- be inserted after the word "increasing" (second occurrence).

page 6, line 18, the words -- (not shown) -- should be inserted after the number "522".

page 7, line 2, the number "100so" should be amended to -- 100 so --.

Appropriate correction is required.

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

Claim 1 is objected to because of the following informalities:

Claim 1

line 12, the word "opening" should be amended to the word -- openings --.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

Claims 1-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1

line 6, the word "over" should be amended to the word -- in -- because it does not appear that the first opening can be over the first conductive layer. Also see Applicants' Fig. 5c.

Claim 7

line 1, it appears that the "electroplating process" is the same as that recited in claim 1, line 11. However, it is unclear if it is. If it is, then it is suggested that the word -- the -- be inserted after the word "after".

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Rose et al.** (US Patent No. 5,567,329).

Rose teaches a method of forming a solid conductive rod, comprising the steps of:

(a) providing a printed circuit board , wherein the printed circuit board includes an insulating core layer **23**, a first conductive layer **29** and a second conductive layer **31** with the insulating core layer sandwiched between the first conductive layer and the second conductive layer (Fig. 1A);

(b) forming a first opening **37'** over the first conductive layer, wherein the first opening exposes a portion of the insulating core layer (Fig 1B);

(c) conducting a drilling operation (= laser ablating) to remove the exposed insulating core layer and form a second opening **37**, wherein the second opening exposes a portion of the second conductive layer (Fig. 1C); and

(d) conducting an electroplating process using the second conductive layer as a negative electrode to fill the first and the second opening solidly with a conductive material (Fig. 1E) [col. 4, line 12 to col. 5, line 7].

The drilling operation is conducted with a laser beam (= laser) [col. 4, lines 46-58].

Forming the first opening further includes: forming a first patterned mask layer 35 enclosing (one face of) the printed circuit board, wherein the first patterned mask layer has a third opening 33 exposing a portion of the first conductive layer; and removing the exposed first conductive layer to form the first opening 37' (col. 4, lines 35-46).

After forming the first opening, the first patterned mask layer is removed (col. 4, lines 44-46).

The material forming the first patterned mask layer is a photoresist (col. 4, lines 25-34).

The material constituting the conductive layers includes copper (col. 4, lines 14-19).

The conductive material includes copper (col. 4, lines 61-64).

The electroplating process further includes filling up the first opening and the second opening with a portion of electroplated material protruding above the first opening (col. 4, line 61 to col. 5, line 7; and Fig. 1F).

Rose does not teach wherein before the electroplating process, the method further includes forming a second patterned mask layer enclosing the printed circuit board and exposing the second opening and an edge portion of the second conductive layer, wherein the exposed edge portion of the second conductive layer serves as an

electroplating electrode.

However, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because one skilled in the art would have been motivated to have modified the method of Rose with wherein before the electroplating process, the method further includes forming a second patterned mask layer enclosing the printed circuit board and exposing the second opening and an edge portion of the second conductive layer, wherein the exposed edge portion of the second conductive layer serves as an electroplating electrode because Rose uses the second conductive layer **31** as an electrode. The side of the conductive material **31** opposite the second side **27** would have been electrically charge during electroplating. However, Rose wants to only electroplate the side of the sheet **21** having the blind via sites **37** (Fig. 1F), thus, forming a second patterned mask layer enclosing the printed circuit board and exposing the second opening and an edge portion of the second conductive layer would have prevented copper from being electroplated on the second conductive layer **31** and on undesired portions of the first conductive layer **29**.

Furthermore, the conductor and pad pattern **39** (Fig. 1E) masks the first conductive layer **29** (Fig. 1F) [copper is not electroplated on this area].

As to wherein after the electroplating process, the method further includes removing the second patterned mask layer, this is well within the ordinary skill of the

artisan in order to form additional patterned conductive layers.

As to subsequently removing the protruding electroplated material, this is well within the ordinary skill of the artisan to smooth the surface of the electroplated material.

As to wherein the protruding electroplated material is removed by sanding with a sanding machine and wherein the protruded electroplated material is removed by grinding with a wheel grinder, chemical mechanical polishing is conventional in the art to remove electroplated material. The substitution of one known equivalent technique for another may be obvious even if the prior art does not expressly suggest the substitution.

Ex parte Novak 16 USPQ 2d 2041 (BPAI 1989); *In re Leshin* 125 USPQ 416; *Lyon v. Bausch & Lomb* 106 USPQ 1; *Graver Tank & Manufacturing Co. V. Linde Air Products Co.* 85 USPQ 328 (Supr. Ct.). MPEP § 2144.07.

Furthermore, it is deemed that the Applicants did not invent a sanding machine and a wheel grinder, unless proven otherwise, and it would have been obvious to the artisan to have removed the protruded electroplated material by sanding or grinding because they would have been doing the same endeavor.

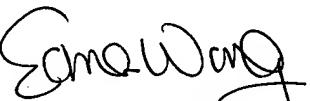
As to wherein the printed circuit board includes an integrated circuit carrier, this is well within the ordinary skill of the artisan because Rose teaches that multilayer printed

wiring boards facilitate the provision of additional leads to an electrical components (col. 1, lines 29-31).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edna Wong whose telephone number is (703) 308-3818. The examiner can normally be reached on Mon-Fri 7:30 am to 5:00 pm, alt. Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (703) 308-3322. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1495.


Edna Wong
Primary Examiner
Art Unit 1753

EW
August 21, 2003